

### Surgeon General's Report on the Health Benefits of Smoking Cessation

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**T**HE 21ST SURGEON GENERAL'S REPORT on smoking and health is the first issued during my tenure as Surgeon General. I am proud to carry on this tradition. It is the duty of the Surgeon General to advise the public about the leading health problems of our time, and smoking continues to be the most important preventable cause of death in our society.

Most of the previous Surgeon General's reports have described the bad news about smoking—how smoking causes lung cancer, other cancers, heart disease, stroke, emphysema, complications of pregnancy, and many other illnesses. Approximately 390,000 Americans die each year from diseases caused by smoking—more than a thousand each day—accounting for more than one of every six deaths in the United States (1, 2). And despite that toll, 50 million Americans smoked more than 500 billion cigarettes last year (3, 4).

The 1990 report, however, presents good news—some very good news indeed. It describes the enormous benefits of quitting smoking. One might ask, what's new here? Haven't we known for many years that quitting smoking is beneficial to health? Well, yes, we have. But before today, that information had never been pulled together into a single comprehensive document. This report, for the first time, describes the health benefits of quitting smoking for all the major smoking-related diseases. It describes, for the first time, how quickly and to what degree the major smoking-related risks go down after stopping smoking. The report uses new mortality data from the American Cancer Society to examine whether the benefits of quitting smoking apply even to people who quit at older ages. The report provides the first comprehensive summary of information on weight gain after quitting smoking.

This 600-page report contains 54 individual chapter conclusions. However, there are five overall conclusions in the report.

1. Smoking cessation has major and immediate health benefits for men and women of all ages.

2. Former smokers live longer than continuing smokers. For example, persons who quit smoking before age 50 have one-half the risk of dying in the next 15 years compared with continuing smokers.

Dr. Novello is the Surgeon General, Public Health Service. This article is excerpted from her statement at a press conference September 25, 1990, in Washington, DC, and from her preface to the report, which was sent to the Congress by Health and Human Services Secretary Louis W. Sullivan, MD.

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3. Smoking cessation decreases the risk of lung cancer, other cancers, heart attack, stroke, and chronic lung disease.

4. Women who stop smoking before pregnancy or during the first 3 to 4 months of pregnancy reduce their risk of having a low birth weight baby to that of women who never smoked.

5. The health benefits of smoking cessation far exceed any risks from the average 5-pound (2.3 kg) weight gain or any adverse psychological effects that may follow quitting.

#### Smoking Cessation and Lung Cancer

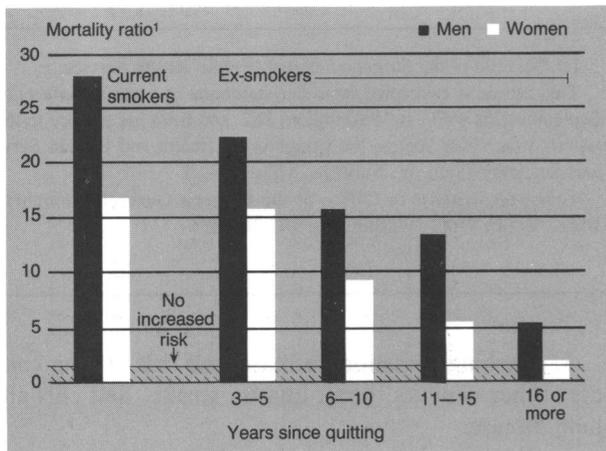
Conclusion 1 states that smoking cessation provides major health benefits. Let's consider lung cancer as an example. Figure 1 shows the risk of dying from lung cancer among those who currently smoke, or who used to smoke, a pack or more of cigarettes per day. These data are from the American Cancer Society's Cancer Prevention Study II, a study conducted in the 1980s that enrolled more than 1.2 million persons and then followed them for deaths from cancer, heart disease, and other diseases. Men who smoke a pack or more of cigarettes per day have 27 times the risk of dying from lung cancer compared with men who never smoked. Female smokers have 16 times the risk. But after quitting smoking, this risk declines steadily among men and women.

Six to 10 years after quitting, the excess risk has declined by about 45 percent. After 16 or more years of abstinence, the excess risk has declined by about 85 percent.

#### Smoking Cessation and Heart Disease

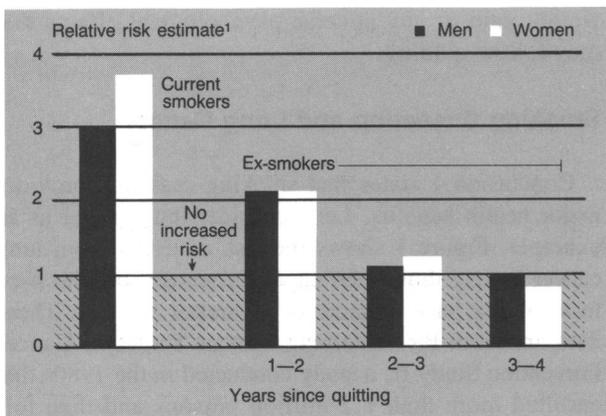
Conclusion 1 also states that smoking cessation provides immediate health benefits. Immediately after a person quits smoking, the body begins to cleanse itself of tobacco toxins. Two of the most noxious agents in tobacco smoke are nicotine and carbon monoxide. Nicotine is the drug in tobacco that causes addiction, and it may contribute to the development of cardiovascular

Figure 1. Smokers' and ex-smokers' risks of dying from lung cancer



<sup>1</sup>Risk in current or former smokers of 1 pack or more of cigarettes per day divided by the risk in lifetime nonsmokers. A ratio of 1.0 represents no increased risk compared with lifetime smokers.  
SOURCE: American Cancer Society, reference 8.

Figure 2. Smokers' and ex-smokers' risks of heart attack



<sup>1</sup>Risk in smokers or ex-smokers relative to risk in lifetime nonsmokers. A relative risk of 1.0 represents no increased risk compared with lifetime nonsmokers.  
SOURCE: Reference 7.

disease, reproductive disorders, and ulcer disease. Carbon monoxide combines with hemoglobin molecules in the bloodstream to form carboxyhemoglobin, which reduces the blood's capacity to deliver oxygen to the tissues. Carbon monoxide is also thought to contribute to the development of cardiovascular disease. Two hours after a person stops smoking, the nicotine concentration in the blood is reduced by half. Two to 8 hours after a person stops smoking, the carboxyhemoglobin level is reduced by half (5).

Some other effects of smoking also implicated in cardiovascular disease appear to be reversible within days or weeks. These effects include increased blood clotting, spasm of the coronary arteries, and increased susceptibility to heart rhythm disturbances (6a).

Because of these rapid changes, one might expect the risk of heart disease to decline soon after smoking ces-

sation. And that is exactly what the data show. For example, figure 2 shows the risk of suffering a first heart attack in current smokers and ex-smokers. These data are from two studies published by Rosenberg and colleagues in the *New England Journal of Medicine* (7, 8). Current smokers had a 3- to 4-fold increased risk of heart attack compared with people who had never smoked. However, one-half of this excess risk was gone within 1 to 2 years after quitting. After 3 or more years of abstinence, according to this study, the risk of heart attack in ex-smokers was similar to the risk in lifetime nonsmokers.

The report reviews many other studies on smoking cessation and heart disease. The overall finding is that the excess risk of coronary heart disease caused by smoking is reduced by about half after 1 year of smoking abstinence and then declines gradually. After 15 years of abstinence, the risk of this disease is similar to the risk in people who never smoked.

### Smoking Cessation and Life Expectancy

Because smoking cessation reduces the risk of specific diseases, it increases life expectancy. An important contribution from this report is its original analysis of the American Cancer Society data to estimate the risk of premature death in current smokers, ex-smokers, and lifetime nonsmokers. These data show that persons who quit smoking before age 50 have one-half the risk of dying in the next 15 years compared with continuing smokers.

Figure 3 shows similar data for persons 55 to 59 years old. Those who continue to smoke have the greatest risk of dying during the next 15 years. Those who quit smoking at that age have a much lower chance of dying during the next 15 years. People who have never smoked have the lowest risk of premature death.

A similar pattern is seen for people who quit smoking past the age of 60. Thus, a key finding of this report is that even people who quit smoking at older ages can expect to enjoy a longer and healthier life compared with those who continue to smoke. Nevertheless, the earlier one quits, the greater the benefits.

### Smoking Cessation and Smoking-Related Disease

Many smokers who already have smoking-related disease or symptoms may be less motivated to quit because of a belief that the damage is already done. However, smoking cessation yields important health benefits to those who already suffer from smoking-related illness. Smokers with heart disease, ulcers, or peripheral vascular disease—that is, poor circulation to the legs—are particularly likely to benefit from smok-

ing cessation. Quitting smoking can hasten recovery, reduce the chance of developing serious complications, and extend life expectancy.

### Smoking Cessation and Pregnancy

Smoking is probably the most important modifiable cause of poor pregnancy outcome among women in the United States. Smoking during pregnancy is associated with low birth weight, preterm delivery, bleeding during pregnancy, premature and prolonged rupture of the membranes, and other complications of pregnancy. Recent estimates suggest that the elimination of smoking during pregnancy could prevent about 5 percent of fetal and early infant deaths, about 20 percent of low birth weight births, and about 8 percent of preterm deliveries in the United States (6b). In groups with a high prevalence of smoking, such as women who have not completed high school, the elimination of smoking during pregnancy could prevent about 10 percent of fetal and early infant deaths, about 35 percent of low birth weight infants, and about 15 percent of preterm deliveries (6b).

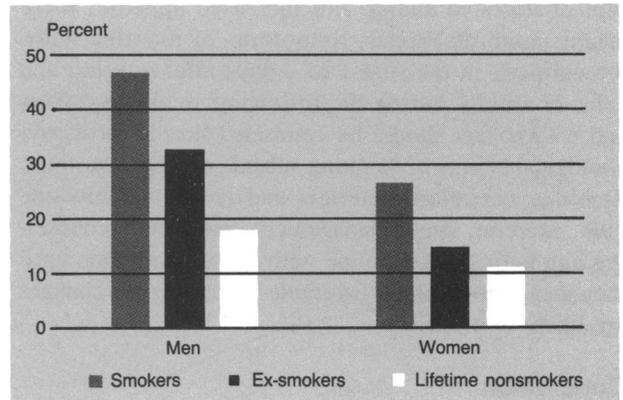
Many women who are cigarette smokers do quit smoking after recognition of pregnancy. However, about 25 percent of pregnant women in the United States smoke throughout pregnancy. A shocking statistic is that half of pregnant women who have not completed high school smoke throughout pregnancy (9). There is an urgent need to expand programs designed to reduce smoking during pregnancy. In addition, we need to develop strategies to prevent smoking relapse after pregnancy, because 70 percent of women who do quit smoking during pregnancy resume smoking within 1 year of delivery. This relapse has three deleterious effects—it increases the mother's health risks, it increases the likelihood that the mother will smoke during future pregnancies, and it exposes the newborn to the harmful effects of passive smoking.

### Smoking Cessation and Weight Gain

It is a common perception that many people gain weight after they quit smoking. The fear of weight gain may discourage many smokers from trying to quit. In addition, the fear or occurrence of weight gain may precipitate relapse among many of those who already have quit.

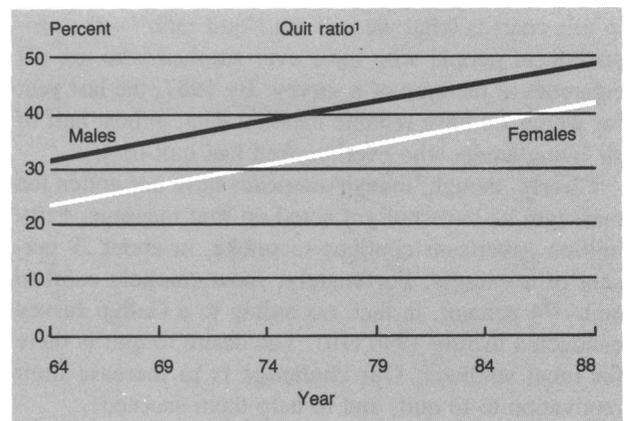
In this report we reviewed 15 studies involving a total of 20,000 persons to determine the likelihood of gaining weight and the average weight gain after quitting. Although four-fifths of smokers who quit gained weight after cessation, the average weight gain was only 5 pounds (6c). This weight gain poses a minimal health risk (6d).

Figure 3. Smokers', ex-smokers', and lifetime nonsmokers' risks of dying in the next one and a half decades



NOTE: Smokers are persons aged 55—59 years who were smoking 1 pack or more of cigarettes per day and continue to smoke.  
 Ex-smokers are persons aged 55—59 years who were smoking 1 pack or more of cigarettes per day, but quit smoking at that age.  
 Lifetime nonsmokers are persons aged 55—59 years who have never smoked cigarettes.  
 SOURCE: Reference 8.

Figure 4. Trends in quitting smoking, United States, 1965—87



<sup>1</sup>The percentage of persons who have ever smoked who are off cigarettes at the time of the survey.  
 SOURCE: National Center for Health Statistics, Data from the National Health Interview Survey, 1966—87, adults 20 years and older.

In addition, the risk of large weight gain after quitting is extremely low. Less than 4 percent of those who quit smoking gained more than 20 pounds. Nevertheless, special advice and assistance should be available to the rare person who does gain considerable weight after quitting. Dietary advice and exercise should be helpful in preventing or reducing weight gain after smoking cessation.

### Psychological Effects of Smoking Cessation

Nicotine withdrawal symptoms represent a major impediment for people to quit. These symptoms include

anxiety, irritability, difficulty concentrating, increased appetite, and urges to smoke. With the possible exception of urges to smoke and increased appetite, these effects soon disappear. Symptoms of nicotine withdrawal peak in the first 1 to 2 days after quitting and subside rapidly during the following weeks. Smokers and ex-smokers should be counseled that adverse psychological effects of smoking subside rapidly over time. Smoking cessation materials and programs, nicotine gum, exercise, stress management, and dietary counseling can help smokers cope with these symptoms until they abate, after which favorable psychological changes are likely to occur.

## Conclusion

As I mentioned at the beginning of this statement, this report provides very good news about the benefits of quitting smoking. It is heartening that many smokers in the United States have already gotten the message. More than 38 million Americans have quit smoking. As figure 4 shows, the quitting rate has climbed steadily among men and women. The measure of quitting used in this chart is what we call the "quit ratio"—the proportion of people who have ever smoked who are off cigarettes at the time of a survey. By 1987, the last year for which we have reliable national data, almost half of all living adults who ever smoked had quit (6e).

Clearly, though, many Americans have not gotten the message, or have not yet acted on that message. Fifty million Americans continue to smoke, or about 29 percent of all adults. Fortunately, most smokers want to quit—74 percent, in fact, according to a Gallup survey conducted in July 1990 (10). The desire to quit is there for most smokers. Our challenge is to increase their motivation to quit, and to help them succeed.

Earlier this month, the Department of Health and Human Services released the National Health Promotion and Disease Prevention Objectives for the Year 2000 (11). One key goal is to reduce smoking prevalence to no more than 15 percent among adults. To achieve that goal, we will need to double the current rate of decline in smoking. Therefore, all sectors of society must intensify their efforts to reduce the use of tobacco—including government, private health organizations, women's groups, minority organizations, youth groups, religious groups, the insurance industry, business, labor, and so on.

For our part, we are kicking off a new campaign to encourage smoking cessation among older Americans. This program has been developed collaboratively by a number of agencies and organizations, including the Centers for Disease Control, the National Institutes of Health, the Department of Veterans Affairs, the Office of Disease Prevention and Health Promotion, the

Administration on Aging, the American Association of Retired Persons, and the Fox Chase Cancer Center. The major message of this campaign is that it is never too late to quit smoking.

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